

# Akiachak Energy Efficiency Project

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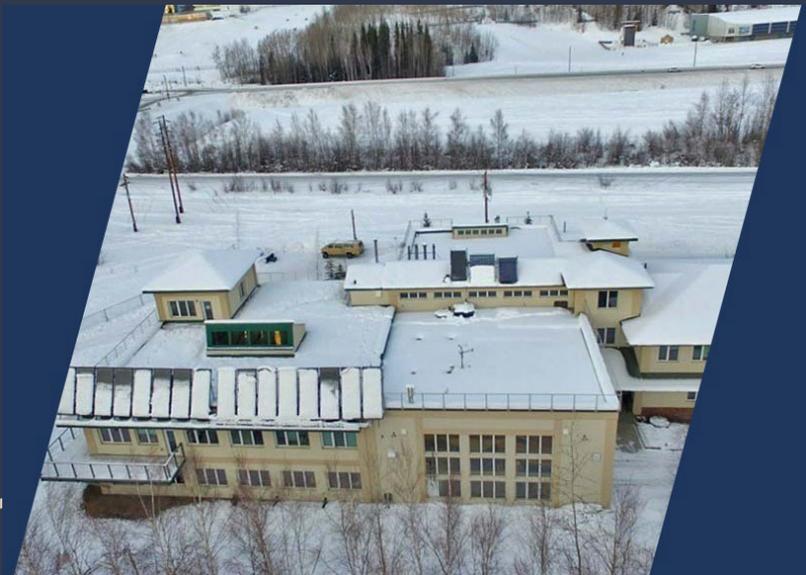
A collaboration between the Akiachak Native Community (ANC) and the National Renewable Energy Laboratory's Cold Climate Housing Research Center

2022 Program Review  
US Department of Energy  
Office of Indian Energy  
Wed, November 16th, 2022



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# Project Partners and Contractors



**CCHRC**

COLD CLIMATE HOUSING  
RESEARCH CENTER

- *Promoting and advancing the development of healthy, durable and sustainable shelter for Alaskans and other circumpolar people.*



Transforming ENERGY

- *NREL advances the science and engineering of energy efficiency, sustainable transportation, and renewable power technologies and provides the knowledge to integrate and optimize energy systems.*

Energy Audits of Alaska

Implementing Energy Efficiency in Commercial, Industrial and Municipal Buildings



- *Implementing energy efficiency in commercial, industrial, and municipal buildings*

# Location of Akiachak Native Community

Akiachak is located 18 miles northeast of Bethel, on the west bank of the Kuskokwim River, on the Yukon-Kuskokwim Delta.



# Akiachak Native Community

Akiachak is a Yup'ik village with a fishing and subsistence lifestyle. It is located on the shores of the Kuskokwim River roughly 60 miles from the Bering Sea. It has a strong traditional lifestyle and was the first city in Alaska to dissolve its city government in favor of Native village government.



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# Akiachak Native Community



## Population

- 1,027: 724 tribal members and 303 out-of-town tribal members
- 93% Native Alaskan

## Community

Akiachak is only accessible year-round by small plane, although a barge brings supplies each summer. Most residents speak Yup'ik. ANC is highly motivated to protect its land and natural resources through conservation and promotes sustainability throughout the community.

- Heating fuel price (with tax): \$6.81/gal.
- Unleaded gas (with tax): \$6.72/gal.
- Electricity \$0.60 / kWh

## Community buildings

- Akiachak Laundry
- Tribal IRA Office
- Police Station
- Daycare
- Clinic

# Energy efficiency improvements based on 2017 audits

## Energy efficiency improvements in five Tribal buildings

Energy independence and resiliency: By reducing energy use of highly used community buildings, ANC will be less reliant on fossil fuels and less vulnerable to supply disruptions.

October 2017: Energy Audits of Alaska

- Reevaluation scheduled for December 2022

### Planned upgrades include:

- Replacing lighting with LEDs
- Installing setback thermostats and occupancy sensors
- Replacing furnaces with more efficient models
- Replacing the circulation pumps with variable speed ones
- Air tightening and adding insulation.



# Akiachak Laundry/ Washeteria



Single story, 1,344 sqft modular ATCO building. (1980). Daily occupancy: one staff person and 10-20 customers. Operates 12:30-22:00 Mon-Sat, Sundays if needed. It is also used as a shower facility (3-4 showers weekly).

Projected 35% reduction in energy costs, totaling \$7,615, with a simple payback of 6.0 years on the \$45,770 implementation cost.

# Akiachak Tribal IRA Office



Single story 2,232 sqft. (2007). Normal occupancy is 11 staff, around 8-10 visitors daily.

The building is used as office space and occupied from 8:00-17:00 Mon-Fri . It has a conference room for council meetings and a small kitchenette.

Projected 43% reduction in energy costs, totaling \$6,187, with a simple payback of 5 years on the \$12,369 implementation cost.

# Akiachak Police Station



Single story, 2,651 sqft. (1996). Normal occupancy varies from 1-5 people, depending on if court is in session.

Projected 36% reduction in energy costs, totaling \$8,088, with a simple payback of 1.7 years on the \$13,556 implementation cost.

# Akiachak Daycare Building



Single story 1,953 sqft. (2002). Normal daily occupancy of 2-3 staff and 3-8 children, operating typically from 9:00-15:00, Mon-Fri.

Projected 34% reduction in energy costs, totaling \$3,916, with a simple payback of 4 years on the \$15,469 implementation cost.

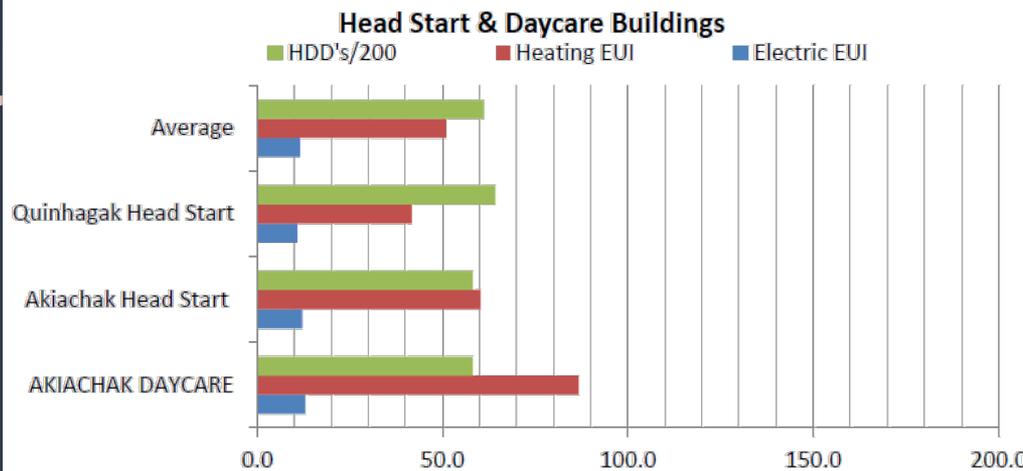
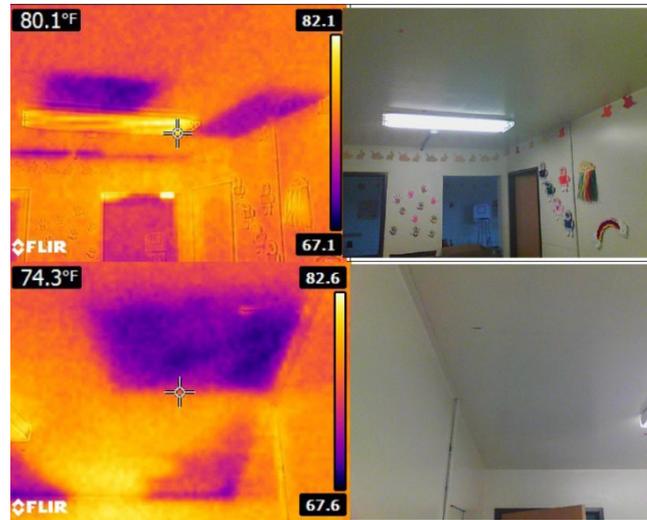
# Akiachak Clinic



Single story 1,840 sqft. (1997). Normally operates from 9:00-17:00 Mon-Fri and occupied by seven staff serving 10-15 patients per day.

Projected 29% reduction in energy costs, totaling \$3,353, with a simple payback of 3.7 years on the \$12,345 implementation cost.

# Audit results: Daycare

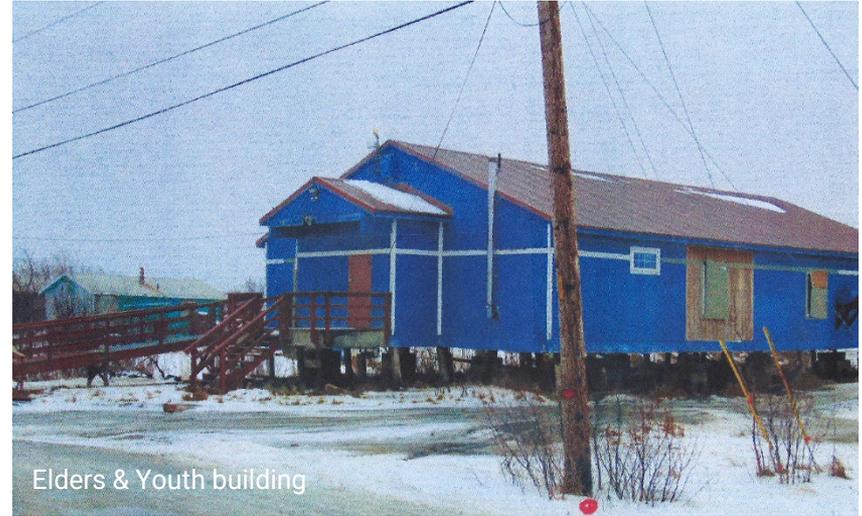


# Project status: Updates since 2017

	2018 Unit Cost	2022 Unit Cost
Electricity – with PCE discount (\$/kWh)	\$0.32	\$0.33
Electricity – without PCE discount (\$/kWh)	\$0.60	\$0.60
Fuel Oil (\$/gallon)	\$5.60	\$6.81



New clinic (2,800 sqft.)



Elders & Youth building

# Activities

Efficiency Upgrades in Tribal Buildings

Location Map

CCHRC is working with three contractor teams to assess and upgrade tribal community buildings in three projects. CCHRC will visit each location, conduct assessments, gather information on building energy use, and provide energy efficiency recommendations, including the implementation and ongoing support of energy efficiency. These and other energy efficiency activities are being implemented in partnership with the contractor teams.

Title	Type	Resource Link
Anchorage Energy Management Plan		<a href="#">Link</a>
Anchorage Schedule Plan		<a href="#">Link</a>
Anchorage Data Management Plan		<a href="#">Link</a>

## Ongoing:

- Outreach and communication with community.

## Current tasks:

- Data management plan (completed)
- **Energy auditor traveling to ANC in mid-December to record any changes to buildings before submitting a final report.**

## Activities to be completed:

- Coordinate with other ongoing projects
- Analyze fuel and electricity bills
- Send scope out for bids
- Evaluate bids, hire subcontractors
- Retrofit work
- Analyze savings
- Report

Quyana!

Thank you!



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